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ABSTRACT

A literature review was conducted to derive a set of policy implications for improving the effectiveness of vocational education. Variables in the areas of employment, education and training, and ancillary effects (aspirations, attitudes and values, feelings of success, and citizenship) were used to organize data collected from 232 studies conducted from 1968 through 1979 on the effects of vocational education. The literature review revealed that most secondary and postsecondary vocational graduates found jobs in training-related fields, most were satisfied with their jobs, and most employers were satisfied with them. No consistent differences in the unemployment rate or earnings of vocational and nonvocational graduates were found. Further, nonvocational graduates exhibited greater academic abilities. Insufficient data were reported on occupational skill attainment, and fewer vocational education students planned to attend college. Thus, considerable uncertainty exists over the effects of vocational education. Policy implications for increasing the effectiveness of vocational education include the following: standardization of research methodology and reporting of results, more precise description of educational programs, establishment of the validity of survey instruments, and development of a way to account for the lack of equivalency in the types of jobs held by vocational and nonvocational graduates. (MN)

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POLICY IMPLICATIONS FOR IMPROVING THE EFFECTIVENESS OF VOCATIONAL EDUCATION

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POLICY IMPLICATIONS FOR IMPROVING THE EFFECTIVENESS OF VOCATIONAL EDUCATION

by Donna M. Mertens

Request for evidence on the effects of educational programs are being made with increasing frequency. Those who must decide how public funds are to be used need more and better information to help them choose among competing alternatives. Vocational education, because of its apparent potential to deal with many of the nation's serious problems, is especially being called upon to demonstrate the effects it can produce. The effects, or outcomes, from participation in vocational education are probably the most debated policy questions relevant to vocational education.

There are many possible outcomes of vocational education. Lee (1978) suggested that multiple outcomes for economic, educational, and social benefits should be used. The following rationale was used as a basis for selecting the outcome variables that were included in this study.

Since the Smith-Hughes Act of 1917 provided the first federal funds for secondary school programs in agriculture, home economics, and trade and industrial education, preparation for employment has been seen as a major goal of vocational education. The 1976 Vocational Education Amendments specified two criteria that each state is to use to evaluate each program "...which purports to impart entry level job skills according to the extent to which program completers and leavers -

(i) find employment in occupations related to training,

and

(ii) are considered by their employers to be well-trained and prepared for employment..."

Section 112, in addition to specifying two criteria by which program completers and leavers shall be evaluated added the phrase "...except that in no case can pursuit of additional education or training by program completers or leavers be considered negative in these evaluations." Thus recognizing that vocational programs prepare students for additional education or training as well as for entry into the labor market.

In addition to its' explicit education and employment objectives, vocational education has always had a more or less diffuse set of goals related to personal growth and citizenship. Vocational educators have long claimed that the special features of their programs provide unique learning opportunities, especially for students who find little of meaning and few opportunities for accomplishment in academic classrooms.

Based on vocational education's legislation, goals, and objectives, three categories of outcome variables were chosen for inclusion in this study: employment, education and training, and ancillary effects. Table 1

lists the basic dependent variables which were selected to organize the summary of findings presented in this report.

Methodology

The policy implications reported in this paper are derived from a literature review which attempted to assemble and summarize all studies that could be obtained on the effects of vocational education that were reported from 1968 through 1979 (Mertens et al., 1980). The specific sources of information included card catalogues, computer searches, existing bibliographies, direct solicitation of reports and consultant recommendations. The computer searches included the following data bases: ERIC/CIJE, Dissertation Abstracts, AIM/ARM, National Technical Information Systems, and the Smithsonian Science Information Exchange.

This extensive search of published sources and solicitation of unpublished reports yielded a total of 1,489 unduplicated titles. After irrelevant studies were eliminated and the remainder screened, a total of 232 titles were used as a basis for the report.

Despite all these steps, some studies were probably not identified and some which were identified were not obtained. These ommissions could have resulted from several causes. First, a study may not have been identified because it was not entered into the literature bases that were searched. If a study has been entered, it may not have been indexed with the descriptions that were used in the computer search. Individuals who were contacted concerning the unreported research may not have responded to the request. Second, a study may have been identified, but a copy could not be obtained. Third, a study may not have been included in the review, even if it were identified and obtained, because it was misclassified when it was reviewed. These misclassifications could result from judgmental errors that a study did not contain data on relevant variables or that it did not refer to public vocational education.

Because of omissions arising from such causes, no claim is made that the review on which these policy implications are based includes all studies reported since 1968. It contains all those that an extensive search could locate, but omissions undoubtably remain. Readers will have to judge for themselves whether the inclusion of such omitted studies would significantly alter the conclusions derived from the studies that were reviewed.

Results of the Literature Review

The emphasis in this analysis was to summarize across a large number of studies to determine if there were constant findings with regard to selected variables. The emphasis was not on critiquing the quality of the studies or on developing a conceptual model for evaluation of vocational education. The fifteen dependent variables were used as a framework for organizing the findings. In addition, the studies of secondary and postsecondary studies were reviewed separately. A brief summary of the results of the literature review follows.

TABLE 1

MAJOR SETS OF DEPENDENT VARIABLES

Type/Class	Variables
I. Employment	A. Employment-Unemployment
	B. Occupation related to training
	C. Earnings
	D. Employee satisfaction
	E. Employer satisfaction
II. Education/Training	A. Basic skill attainment
	B. Academic abilities
	C. Attendance and dropout
	D. Occupational skill attainment
	E. Continuing education
	F. Satisfaction with training
III. Ancillary Effects	A. Aspirations
	B. Attitudes and values
	C. Feelings of success
	D. Citizenship

Employment

No differences in unemployment rates were found for vocational and nonvocational high school graduates. Postsecondary vocational graduates generally had lower unemployment rates than did their vocational peers.

A majority (over 50 percent, usually closer to 70 percent) of secondary and postsecondary vocational graduates obtained jobs in training-related areas.

Mixed results were reported for earnings. Some studies reported no differences between vocational and nonvocational graduates; others reported an initial earnings advantage for vocational graduates which disappeared over time. Trades and industry graduates at the secondary level and technical graduates at the postsecondary level consistently had higher earnings than graduates of other vocational programs.

A majority of employers were satisfied with vocational graduates; a majority of vocational graduates were satisfied with their jobs.

Education

Mixed results were reported for basic skill attainment and academic abilities, although vocational students appeared to be below academic and above or the same as general curriculum students. The mixed nature of the results are exemplified by the following studies' findings. Custer (1973), using the Stanford Achievement Test, found no difference in the mathematics scores of cooperative and non-cooperative education students. He did find the cooperative education students scored higher on the reading portion of the test. This contrasts with the findings of Horvath (1973) who used the American College Test (ACT). He found that vocational-technical students were more proficient at mathematics and less proficient in English and Social Studies than their college-preparatory peers. To further confuse the issue, Perkins (1973), using the Basic Educational Achievement Program test battery, found no difference in reading and mathematics scores between vocational and nonvocational groups, but that the vocational students scored higher on the vocabulary portion of the test.

Insufficient data were reported on occupational skill attainment to draw any conclusions (although employers reported being satisfied). The type of data available on this topic included such studies as Farrington (1974) and McQuay (1974). Farrington's study compared teaching strategies in an agricultural mechanics course, and included no appropriate comparison group. McQuay looked at the effects of one versus two years of training on shop achievement, thus also not including an appropriate comparison group.

Insufficient data were available to determine if vocational education helps to retain dropouts. At the secondary level, more males than females drop-out; a higher percentage of distributive enrollees drop-out than office education enrollees. Work experience appears to have a positive influence on keeping students in school. Value systems of drop-outs and graduates appear to differ.

About one-third of vocational graduates continued their education beyond the secondary level, while almost twice as many nonvocational graduates did so. Vocational graduates reported being satisfied with their training.

Ancillary Effects

Fewer vocational than nonvocational students planned to attend college (usually 30 percent for vocational and 60 percent for nonvocational students). Vocational students reported feeling good about themselves. This was evidenced by their response to such items as "I take a positive attitude toward myself." Civic activity (e.g. voting) was infrequent for both vocational and nonvocational graduates.

Policy Implications

The policy implications derived from the literature review reported above include the following:

1) Considerable uncertainty exists over just what effects can reasonably be attributed to participation in vocational education. Estimating the long-range effects of any education experience is probably the most difficult problem in all of educational research. When the outcomes of interest are subject to many influences over which the education program has little or no control, the difficulties are multiplied many times. Questions can be raised whether any educational experiences can produce effects which are powerful enough to be detected with existing research methods.

2) The studies which were assembled varied widely on virtually every dimension. What is surprising, given the variability in the studies and in the programs they examined, is the similarity of results they yielded with regard to employment and the relatedness of employment to training. This is not to say they all yielded similar results. The degree of clustering does, however, suggest that these studies are reflecting results that are usually produced by vocational programs. The alternative explanations - that these studies are all reflecting systematic error - seems unlikely given their wide variability.

3) Despite the difficulty of the the research problem to estimate long range effects and despite weaknesses in the separate studies, as a body these studies do reflect some effects that seem highly likely to have resulted from participation in vocational education. Sufficient evidence exists to indicate that (at least at the postsecondary level) participation in vocational education is associated with higher levels of employment. In addition, most vocational students are obtaining jobs in the occupational areas for which they are trained. This suggests that these former students are being hired for jobs that require specialized training. Finally, the preponderance of the evidence suggests that employers are satisfied with vocational graduates and that these graduates are satisfied with their jobs and their training.

4) Beyond the consistently-reported findings described above, the evidence is not so encouraging. The research methodology and the reporting of results contribute to the inconsistency of findings among studies and the difficulty of drawing meaningful conclusions concerning the effects of vocational education. If future research is to be used for formulating policy which will result in an improvement of vocational education, specific changes in the methodology and reporting practices are needed. In terms of reporting research, more emphasis should be given to describing the educational program in order for researchers to know what the "treatment" actually is. Methods for classifying students as vocational, academic and general need more attention. Use of actual transcripts with decision rules can insure a more accurate classification. The reliability and validity of instruments should be established and reported. More attention should also be given to reporting contextual factors which influence the effects of educational programs (e.g. unionization in specific occupations and economic conditions in communities). Researchers should report the methodology more completely and clearly, including sample size and response rates. Dependent variables should be chosen intelligently in order for them to represent legitimate outcomes for vocational education. If sound conclusions are to be drawn concerning the effects of vocational education, sound research must be more pervasively conducted, reported and disseminated.

5) It has been recognized that all research reported since 1968 was undoubtably not included in the review on which these policy implications are based. While this last policy implication concerns areas in need of further research, it is possible that such research has been done and the need is for better dissemination of the results. Nevertheless, based on the current "state of the art", further research is necessary in the following areas before policy can be established that will result in improving vocational education's effectiveness. The effect of vocational education on special needs groups such as the handicapped and disadvantaged emerges as an area in need of further research. In addition, the area of equity for both sexes and all races is an important issue in need of more research. Less research was found for postsecondary than secondary effects, especially at the national level.

In the employment area, the definitions of employment and unemployment present a problem. Standardization of definition would insure that results are comparable across studies. This was also a problem with the earnings variable. Because earnings is an important indicator, increased research should be undertaken to improve the reliability of this measure. Comparisons of male and female earnings underscore the importance of the equity issue. The variable "occupation related to training" raises the question of how specific training should be, particulary at the secondary level. The research question of interest is: "Should emphasis be given to training students in specific occupational skills or in more general employability skills?"

Measures of employer satisfaction are confounded because of a lack of equivalency in the types of jobs held by vocational and nonvocational graduates. Future research of employer satisfaction should explore ways to account for this variation.

The attainment of basic skills is an area in need of further research from two perspectives. First, the current level of attainment should be more carefully studied, and second, the proper balance in the curriculum between basic skill and occupational skill attainment should be explored. Better measurement and reporting of occupational skill attainment is also needed. The areas of attendance and dropout need additional research to answer the question "Can vocational education retain students in school who might otherwise have dropped out?" Also, what can be done to help dropouts after they have left school? The high rates of dropouts for minorities and those enrolled in nontraditional programs is another area of concern. Another question in need of research is "What role can counseling play in reducing the dropout rates?" Two additional areas of research are related to the continuing education variable. Examination of and control for continuing education activities outside the traditional school systems should be included in future research. The other question concerns the degree of preparedness for postsecondary education that is experienced by secondary vocational graduates.

A much smaller body of data was located for inclusion in this review for ancillary effects than for education and employment. If the areas aspirations, attitudes and values, feelings of success, and citizenship are judged to be important effects of vocational education, then these areas are in need of further research.

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